User Manual

VZ4000

Wireless G Desktop Card

Table of Contents

1 Introduction 1

Benefits of a Home Network 1

Advantages of a Wireless Network 1

Placement of your Wireless Networking Hardware for Optimal Performance. 2

2 Overview 5

Product Features 5

Applications and Advantages 6

Product Specifications. 6

System Requirements 7

Package Contents 7

3 Installing and Setting up the Card. 8

Step 1: Install the Software 8

Step 2: Insert the Card into an Available PCI Slot on your Desktop . . 9

Step 3: Use the Wireless Networking Utility from Verizon 11

4 Using the Wireless Networking Utility from Verizon. 12

Accessing the WNU from the Windows System Tray 12

Setting Wireless Network Profiles 15

Securing your Wi-Fi Network 15

Configuring your Wireless G Desktop Card to use Security 20

5 Troubleshooting. 28

6 Information. 34

Introduction

Thank you for purchasing the Wireless G Desktop Card (the Card) from Verizon. Now you can take advantage of this great new technology and gain the freedom to network your home and office computers wirelessly. This Card allows you to connect a desktop computer to your network. The easy installation and setup will have you networking wirelessly in minutes. Please be sure to read through this User Manual completely, and pay special attention to the section entitled "Placement of your Wireless Networking Hardware for Optimal Performance" on page 2.

Benefits of a Home Network

Your Verizon Home Network will allow you to:

- Share one high-speed Internet connection with all the computers in your home
- Share resources, such as files, and hard drives among all the connected computers in your home
- Share a single printer with the entire family
- Share documents, music, video, and digital pictures
- Store, retrieve, and copy files from one computer to another
- Simultaneously play games online, check Internet email, and chat

Advantages of a Wireless Network

Here are some of the advantages of setting up a wireless network:

- **Mobility** – you no longer need a dedicated "computer room"—you can work on a networked laptop or desktop computer anywhere within your wireless range
- **Easy installation** – Verizon Quick Installation Software makes setup simple
- **Flexibility** – set up and access printers, computers, and other networking devices from anywhere in your home
- **Easy expansion** – the wide range of Verizon networking products lets you expand your network to include devices such as printers and gaming consoles
- **No cabling required** – you can spare the expense and hassle of retrofitting Ethernet cabling throughout the home or office
- **Widespread industry acceptance** – choose from a wide range of interoperable networking products

Placement of your Wireless Networking Hardware for Optimal Performance

Your wireless connection will be stronger the closer your computer is to your wireless router. Typical indoor operating range for your wireless devices is between 100 and 200 feet. In the same way, your wireless connection and performance will degrade somewhat as the distance between your wireless router and connected devices increases. This may or may not be noticeable to you. As you move farther from your wireless router, connection speed may decrease. Factors that can weaken signals simply by getting in the way of your network's radio waves are metal appliances or obstructions, and walls.

If you have concerns about your network's performance that might be related to range or obstruction factors, try moving the computer to a position between five and 10 feet from the wireless router in order to see if distance is the problem. If difficulties persist even at close range, please contact Verizon Technical Support at 888-604-5880.

Note: While some of the items listed below can affect network performance, they will not prohibit your wireless network from functioning; if you are concerned that your network is not operating at its maximum effectiveness, this checklist may help.

1. Placement of your Wireless Router

Place your wireless router, the central connection point of your network, as close as possible to the center of your wireless network devices.

To achieve the best wireless network coverage for your "wireless clients," (i.e. computers enabled by Wireless Notebook Network Cards, Wireless Desktop Network Cards, and Wireless USB Adapters):

- Ensure that your wireless router's antennas are parallel to each other, and are positioned vertically (toward the ceiling). If your wireless router itself is positioned vertically, point the antennas as much as possible in an upward direction.
- In multistory homes, place the wireless router on a floor that is as close to the center of the home as possible. This may mean placing the wireless router on an upper floor.
- Try not to place the wireless router near a cordless 2.4GHz phone.

2. Avoid Obstacles and Interference

Avoid placing your wireless router near devices that may emit radio "noise", such as microwave ovens. Other objects that can inhibit wireless communication can include:

- Refrigerators
- Washers and/or dryers
- Metal cabinets
- Large aquariums
- Metallic-based, UV-tinted windows

If your wireless signal seems weak in some spots, make sure that objects such as these are not blocking the signal's path between your computers and wireless router.

3. Cordless Phone Placement

If the performance of your wireless network is impaired after attending to the above issues, and you have a cordless phone:

- Try moving cordless phones away from the wireless router and your wireless-enabled computers.
- Unplug and remove the battery from any cordless phone that operates on the 2.4GHz band (check the manufacturer's information). If this fixes the problem, the phone may be interfering.
- If your phone supports channel selection, change the channel on the phone to the farthest channel from your wireless network as possible. For example, change the phone to channel 1 and move your wireless router to channel 11. (Your channel selection will vary depending on your region.) See your phone's user manual for detailed instructions.
- If necessary, consider switching to a 900MHz or 5GHz cordless phone.

4. Choose the “Quietest” Channel for your Wireless Network

In locations where homes or offices are close together, such as apartment buildings or office complexes, there may be wireless networks nearby that can conflict with yours. Use the Site Survey capabilities of your Wireless Networking Utility to locate any other wireless networks, and move your wireless router and computers to a channel as far away from other networks as possible.

Experiment with more than one of the available channels in order to find the clearest connection and avoid interference from neighboring cordless phones or other wireless devices.

For more wireless networking products from Verizon, use the detailed site survey and wireless channel information included in your User Manual.

5. Secure Connections, VPNs, and AOL

Secure connections typically require a user name and password, and are used where security is important. Secure connections include:

- Virtual Private Network (VPN) connections, often used to connect remotely to an office network
- The “Bring Your Own Access” program from America Online (AOL), which lets you use AOL through broadband provided by another DSL or cable service
- Most online banking websites
- Many commercial websites that require a user name and password to access your account

Secure connections can be interrupted by a computer’s power management setting, which causes it to “go to sleep.” The simplest solution to avoid this is to simply reconnect by re-running the VPN or AOL software, or by re-logging into the secure website.

A second alternative is to change your computer’s power management settings so it does not go to sleep; however, this may not be appropriate for portable computers. To change your power management setting in Windows, see the “Power Options” item in the Control Panel.

If you continue to have difficulty with Secure Connections, VPNs, and AOL, please review steps 1-4 in the previous pages to be sure you have addressed these issues.

Product Features

The Card complies with the IEEE 802.11g standard in order to communicate with other 802.11g-compliant wireless devices at 54Mbps. The Card is compatible with all 802.11g devices as well as other 802.11b products at 11Mbps. 802.11g products operate on the same 2.4GHz frequency band as 802.11b Wi-Fi® products.

- 2.4GHz ISM (Industrial, Science, and Medical) band operation
- Integrated easy-to-use Wireless Networking Utility
- PCI interface, for operation in virtually any desktop computer
- WPA, WPA2, 64-bit WEP (Wired Equivalent Privacy), or 128-bit encryption
- Wireless access to networked resources
- Support for both Infrastructure and Ad-Hoc (peer-to-peer) networking modes
- Easy installation and use
- External antenna
- LED power and network link

Applications and Advantages

- **Wireless roaming with a laptop around the home or office**
  Offers the freedom of networking—without cables
- **Connection rates of up to 54Mbps**
  Provides immediate wireless connectivity at home, work, and hotspot locations without compromising the use of existing 802.11b and 802.11g products
- **Compatibility with 802.11b products**
  802.11g wireless LAN solutions are backward-compatible with existing Wi-Fi (IEEE 802.11b) products and with other products that display the 54g logo
- **Difficult-to-wire environments**
  Enables networking in buildings with solid or finished walls, or open areas where wiring is difficult to install
- **Frequently changing environments**
  Adapts easily in offices or environments that frequently rearrange or change locations
- **Temporary LANs for special projects or peak time**
  Sets up temporary networks such as at trade shows, exhibitions, and construction sites, which need networks on a short-term basis; also companies who need additional workstations for a peak activity period
- **SOHO (Small Office/Home Office) networking needs**
  Provides the easy and quick, small network installation SOHO users need

Product Specifications

Host Interface:	32-bit PCI interface
Power Consumption:	Tx/Rx peak 510/250mA @ 3.3VDC (max.)
Operating Temperature:	32—140 degrees F (0—60 degrees C)
Storage Temperature:	-4—176 degrees F (-20—80 degrees C)
Humidity:	Max. 90% (non-condensing)
Typical Operating Range:	100–200 ft.* (30—60m) indoors *Wireless performance may vary

(a) Link LED
Lights up when the Card links to a wireless network

(b) Activity LED
Lights up and flashes when the Card is active

(c) Card Connector
Fits securely into your computer's PCI slot

(d) Antenna

System Requirements

- PC-compatible desktop computer with one available PCI slot and CD-ROM drive
- Windows® 98SE, Me, 2000, or XP

Package Contents

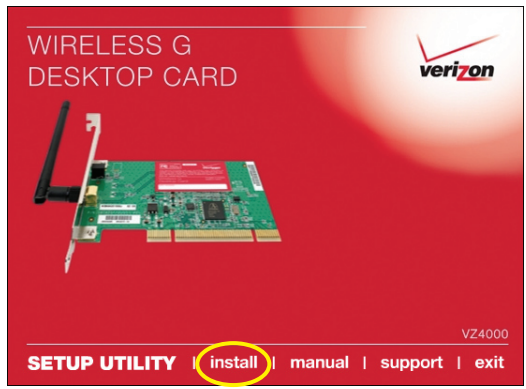
- Wireless G Desktop Card
- Quick Installation Guide
- Installation Software CD
- User Manual

Step 1 | Install the Software

Important Note: Install the software before inserting the Card.

1.1 Insert the Installation Software CD into your CD-ROM drive.

1.2 The Wireless Networking Utility (WNU) from Verizon will automatically appear (may take 15–20 seconds to appear).



Note: If the WNU screen does not appear within 20 seconds, access your CD-ROM by double-clicking on the "My Computer" icon; then, double-click on the CD-ROM drive into which the installation CD has been placed. Double-click on the folder named "Files", then double-click on the icon named "setup.exe".

1.3 Click "install" from the menu.

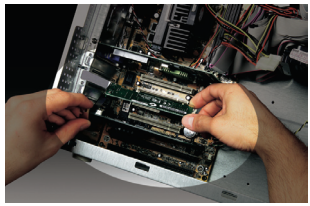
1.4 Installation will now start. The wizard will prompt you to shut down your computer and insert the Card into the PCI slot.

Step 2 | Insert the Card into an Available PCI Slot on your Desktop

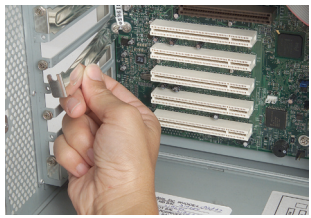
2.1 Shut down your computer and disconnect your power cord.

2.2 Remove the screws behind your computer case that secure the computer cover and remove cover.

Note: Touch any metal part of the case to discharge static electricity to avoid damage to the product or your computer.



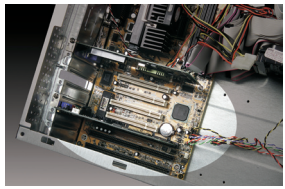
2.3 Locate an empty PCI expansion slot. It is usually white in color. Confirm that the Card will fit into the slot you have chosen. Keep in mind that the included antenna needs to be oriented with the top pointing up. If there are cables and other connectors in the way, try to pick the PCI slot that has the fewest obstructions to the correct positioning of the antenna.



2.4 Remove the metal port cover from the back of the computer that corresponds to the PCI slot you selected. If there is a screw, place it in a safe place, as you will be using it to attach the Card to the computer later.

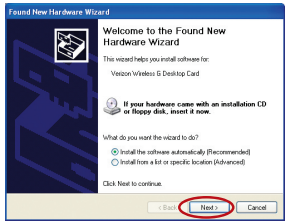
2.5 Push the Card firmly into the PCI slot that you have chosen. Apply pressure as needed until the connector is fully seated.

2.6 Now secure the Card with the screw that you previously placed in a safe place.

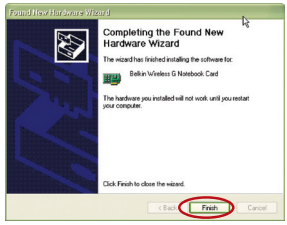


2.7 Carefully screw the antenna onto the threaded connector on the Card. Turn the antenna until it is vertical and pointing up.

2.8 Replace the computer's cover. Now that the Card is installed, you can reconnect the power cord, and turn it back on.


Found New Hardware Wizard
Welcome to the Found New Hardware Wizard
This wizard helps you install software for:
Verizon Wireless G Desktop Card
If your hardware came with an installation CD or floppy disk, insert it now.
What do you want the wizard to do?
Install the software automatically (Recommended)
Install from a list or specific location (Advanced)
Click Next to continue.
< Back
Next >
Cancel

2.9 After restarting, the wizard will prompt you to install software for the Card. Click the "Install the software automatically (Recommended)" option.

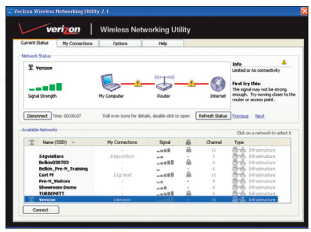

Found New Hardware Wizard
Completing the Found New Hardware Wizard
The wizard has finished installing the software for:
Belkin Wireless G Notebook Card
The hardware you installed will not work until you restart your computer.
Click Finish to close the wizard.
< Back
Finish
Cancel

2.10 Hardware installation is now complete. Click "Finish" to close the wizard.

Installation is now complete.

Step 3 | Use the Wireless Networking Utility from Verizon

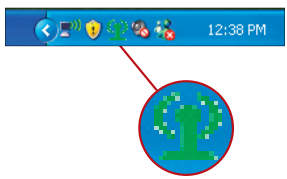
3.1 After restarting your computer, double-click the Wireless Networking Utility (WNU) icon on the desktop screen.



3.2 The Wireless WNU screen will appear.

Select a network to connect to by selecting a network from the "Available Networks" list. Then, click "Connect".

Note: In order to see your available networks, you must be near a working wireless router.



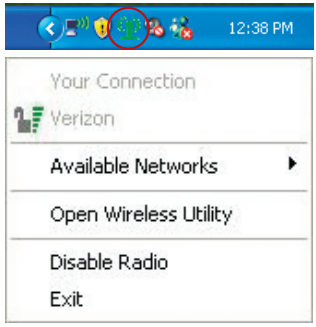
3.3 The WNU icon can also be found on the system tray.

Note: Double-clicking on the WNU icon on the system tray will bring up the "Utility" screen.

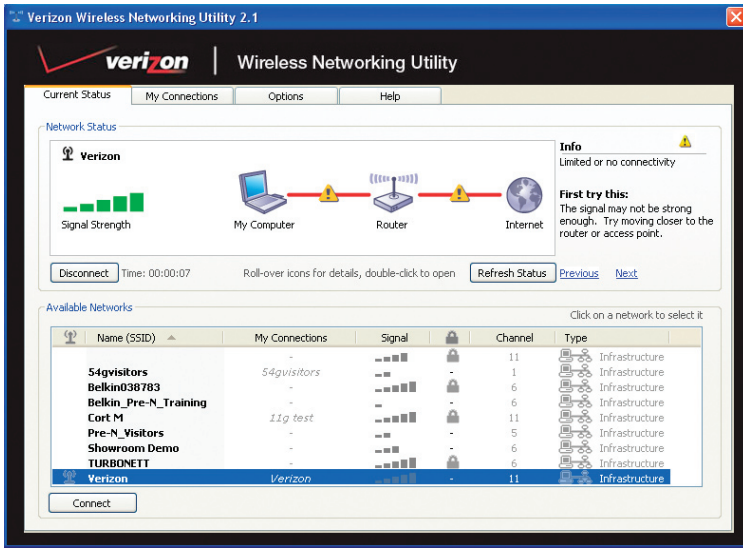
After successfully installing the Wireless Networking Utility (WNU) from Verizon, configurations for wireless connection and security are just a few easy clicks away.

Accessing the WNU from the Windows System Tray

To access the WNU, simply place your mouse pointer and right-click over the WNU icon on the Windows system tray on the lower right-hand corner of your computer's desktop.



If the icon is not present, click on "Start > Programs > Verizon > Wireless Networking Utility".



The WNU's default screen is the "Current Status" tab. The "Current Status" tab displays the current network status and available networks.

Network Status

This window displays the connectivity status of the current network, between the computer and router, and between the router and the Internet. In the event of a problem, use the "Network Status" window to determine the source (e.g., computer, router, or Internet/modem).

Available Networks

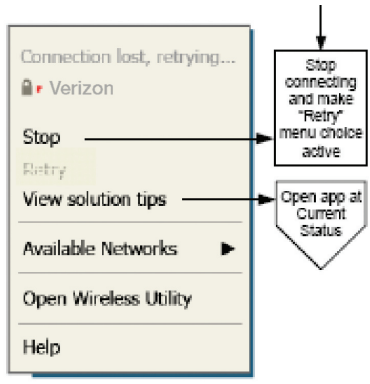
This window displays the available networks at the current location as well as their SSID, Signal Strength, Security Type, Channel, and Network Type.

Lost Wireless Connection

If the current wireless connection is lost, a window will pop up and the WNU will attempt to reconnect.

Connection Failure

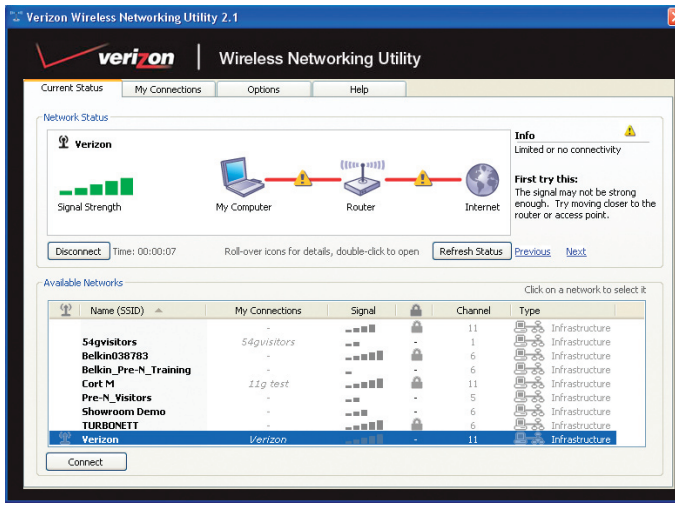
Other options will appear during attempts to reconnect. To stop connecting, click “Stop” and to reattempt connection, click “Retry”.



Right-click during connection failure

Network Status and Solution Tips

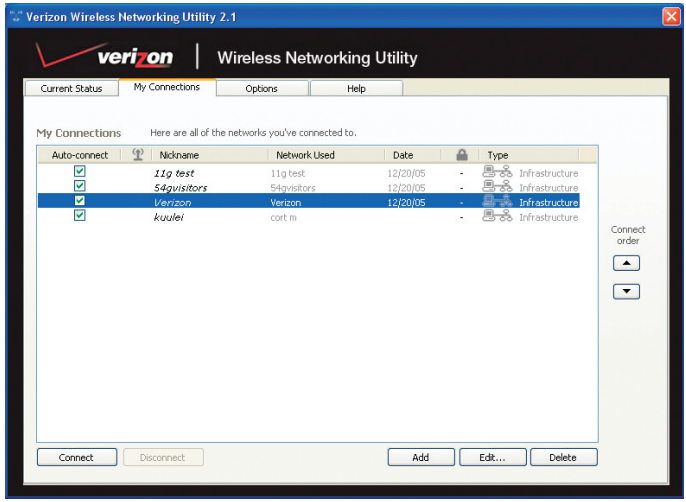
To further understand the current Network Status, click “Open Wireless Utility”. The default screen will be the “Current Status” tab and the “Network Status” section determines which connections are good and/or faulty.



The WNU also features a “Solution Tips” section that provides troubleshooting guidelines.

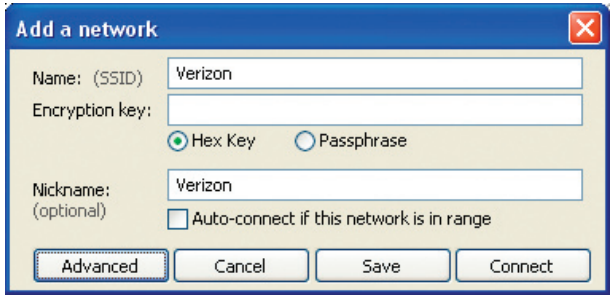
Setting Wireless Network Profiles

The “My Connections” tab on the WNU allows you to add, edit, and delete connection profiles. It also displays signal strength, security, and network type.



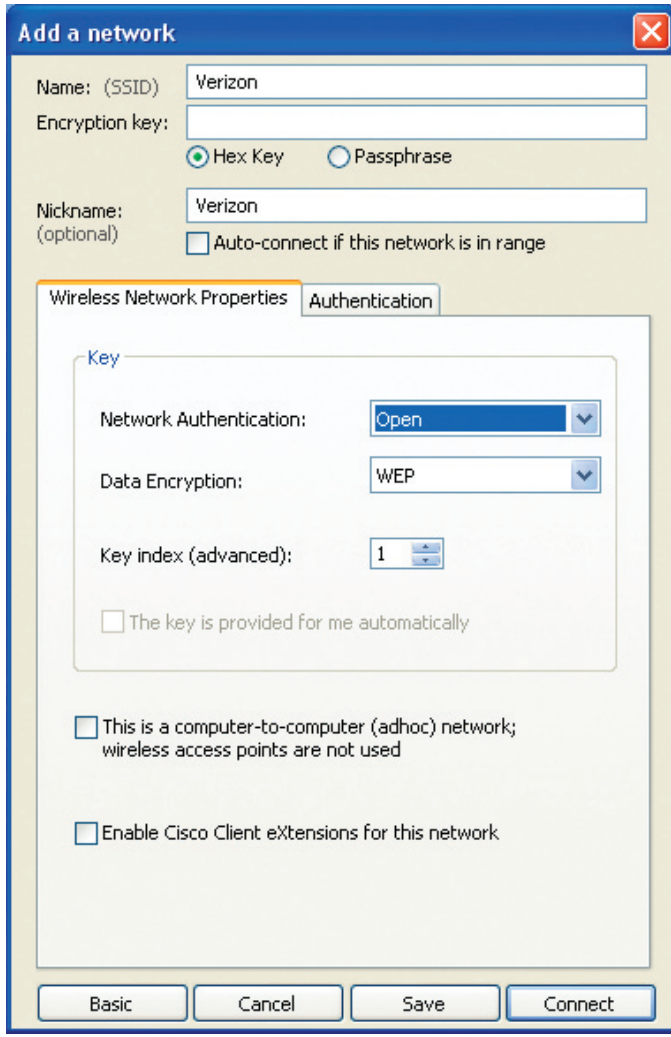
Securing your Wi-Fi® Network

If you choose to connect to a secure network, determine the type of security (WPA or WEP*) and use the appropriate field in the dialog box.



*Types of security

Note: When you select a network using encryption, you will first see the simple security screen. Click the "Advanced" button to see other security options (below).



Wired Equivalent Privacy (WEP) is a less secure, but more widely adopted wireless security protocol. Depending on the security level (64- or 128-bit), the user will be asked to input a 10- or 26-character hex key. A hex key is a combination of letters, a–f, and numbers, 0–9.

Wireless Protected Access (WPA) is the new standard in the wireless security. However, not all wireless cards and adapters support this technology. Please check your wireless adapter's user manual to check if it supports WPA. Instead of a hex key, WPA uses only passphrases, which are much easier to remember.

The following section, intended for the home, home office, and small office user, presents a few different ways to maximize the security of your wireless network.

At the time of this User Manual's publication, there are four encryption methods available.

Encryption Methods:

Name	64-Bit Wired Equivalent Privacy	128-Bit Wired Equivalent Privacy	Wi-Fi Protected Access-TKIP	Wi-Fi Protected Access 2
Acronym	64-bit WEP	128-bit WEP	WPA-TKIP/ AES (or just WPA)	WPA2-AES (or just WPA2)
Security	Good	Better	Best	Best
Features	Static keys	Static keys	Dynamic key encryption and mutual authentication	Dynamic key encryption and mutual authentication
	Encryption keys based on RC4 algorithm (typically 40-bit keys)	More secure than 64-bit WEP using a key length of 104 bits plus 24 additional bits of system-generated data	TKIP (Temporal Key Integrity Protocol) added so that keys are rotated and encryption is strengthened	AES (Advanced Encryption Standard) does not cause any throughput loss

Wired Equivalent Privacy (WEP)

WEP is a common protocol that adds security to all Wi-Fi-compliant wireless products. WEP gives wireless networks the equivalent level of privacy protection as a comparable wired network.

64-Bit WEP

64-bit WEP was first introduced with 64-bit encryption, which includes a key length of 40 bits plus 24 additional bits of system-generated data (64 bits total). Some hardware manufacturers refer to 64-bit as 40-bit encryption. Shortly after the technology was introduced, researchers found that 64-bit encryption was too easy to decode.

128-Bit Encryption

As a result of 64-bit WEP's potential security weaknesses, a more secure method of 128-bit encryption was developed. 128-bit encryption includes a key length of 104 bits plus 24 additional bits of system-generated data (128 bits total). Some hardware manufacturers refer to 128-bit as 104-bit encryption.

Most of the new wireless equipment in the market today supports both 64-bit and 128-bit WEP encryption, but you might have older equipment that only supports 64-bit WEP. All wireless products from Verizon will support both 64-bit and 128-bit WEP.

Encryption Keys

After selecting either the 64-bit or 128-bit WEP encryption mode, it is critical that you generate an encryption key. If the encryption key is not consistent throughout the entire wireless network, your wireless networking devices will be unable to communicate with one another.

You can enter your key by typing in the hex key manually, or you can type a passphrase into the "Passphrase" field and click "Generate" to create a key. A hex (hexadecimal) key is a combination of numbers and letters from A–F and 0–9. For 64-bit WEP, you need to enter 10 hex keys. For 128-bit WEP, you need to enter 26 hex keys.

For instance:

AF 0F 4B C3 D4 = 64-bit WEP key

C3 03 0F AF 0F 4B B2 C3 D4 4B C3 D4 E7 = 128-bit WEP key

The WEP passphrase is NOT the same as a WEP key. Your Card uses this passphrase to generate your WEP keys, but different hardware manufacturers might have different methods on generating the keys. If you have multiple vendors' equipment in your network, the easiest thing to do is to use the hex WEP key from your wireless router and enter it manually into the hex WEP key table in your Card's configuration screen.

WPA (Wi-Fi Protected Access)

WPA is a new Wi-Fi standard that improves upon the security features of WEP. To use WPA security, the drivers and software of your wireless equipment must be upgraded to support it. These updates will be found on your wireless vendor's website. There are three types of WPA security: WPA-PSK (no server), WPA (with radius server), and WPA2.

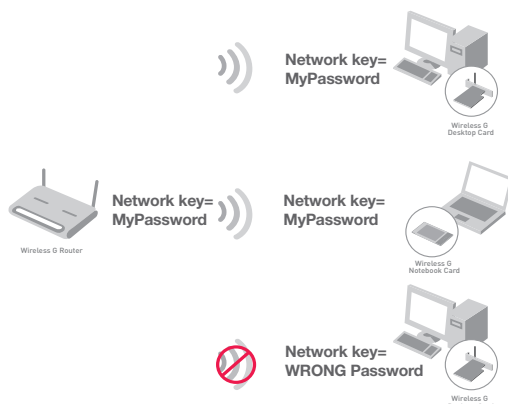
WPA-PSK (no server) uses what is known as a pre-shared key as the network key. A network key is a password that is between eight and 63 characters long. It can be a combination of letters, numbers, or characters. Each client uses the same network key to access the network. Typically, this is the mode that will be used in a home environment.

WPA (with radius server) is a system where a radius server distributes the network key to the clients automatically. This is typically found in a business environment.

WPA2 requires Advanced Encryption Standard (AES) for encryption of data, which offers much greater security than WPA. WPA uses both Temporal Key Integrity Protocol (TKIP) and (AES) for encryption.

Most Wi-Fi products ship with security turned off. So once you have your network working, you need to activate WEP or WPA and make sure all your wireless devices are sharing the same network key.

The following diagram shows the effect of not having the correct network key throughout your network.



The Card cannot access the network because it uses a different network key than the one configured on the wireless router.

IMPORTANT: You must now set all wireless network cards/adapters to match these settings.

Configuring your Wireless G Desktop Card to use Security

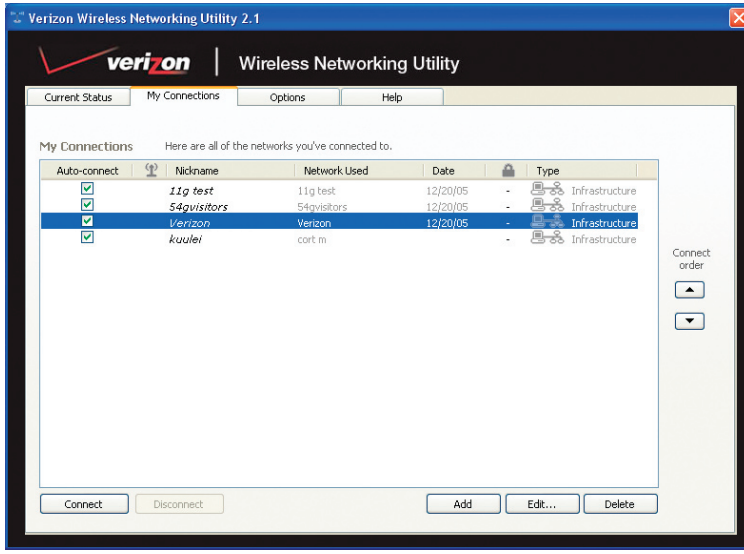
At this point, you should already have your wireless router set to use WPA or WEP. In order for you to gain a wireless connection, you will need to set your Wireless G Desktop Card to use the same security settings.

Changing the Wireless Security Settings

The Wireless G Desktop Card supports the latest WPA security feature as well as the legacy WEP security standard. By default, wireless security is disabled.

To enable security, you will first need to determine which standard is used by the router. (See your wireless router's manual for directions on how to access the security settings.)

To access the security settings on your Card, click the "My Connections" tab and point to the connection for which you want to change security settings. Click "Edit" to change settings.



WEP Setup

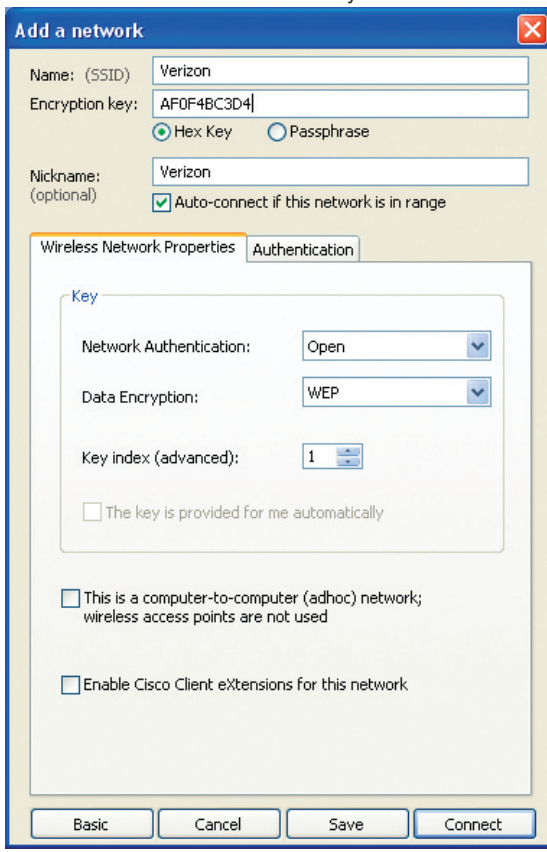
64-Bit WEP Encryption

1. Select “WEP” from the drop-down menu.

2. After selecting your WEP encryption mode, you can enter your key by typing in the hex key manually, or you can type in a passphrase in the “Passphrase” field and click “Generate” to create a key.

   A hex (hexadecimal) key is a combination of numbers and letters from A–F and 0–9. For 64-bit WEP, you need to enter 10 hex keys.

   For instance:
   AF 0F 4B C3 D4 = 64-bit WEP key



3. Click “Save” to finish. Encryption in the wireless router is now set. Each of your computers on your wireless network will now need to be configured with the same security settings.

WARNING: If you are using a wireless client to turn on the security settings in your wireless router, you will temporarily lose your wireless connection until you activate security on your wireless client. Please record the key prior to applying changes in the wireless router. If you don’t remember the hex key, your client will be locked out of the wireless router.

128-Bit WEP Encryption

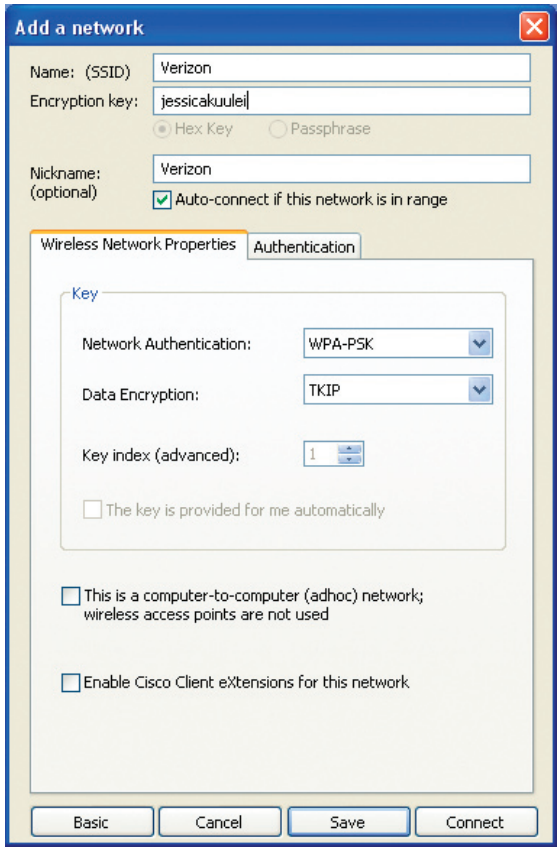
1. Select “WEP” from the drop-down menu.

2. After selecting your WEP encryption mode, you can enter your key manually by typing in the hex key manually, or you can type in a passphrase in the “Passphrase” field and click “Generate” to create a key.

A hex (hexadecimal) key is a combination of numbers and letters from A–F and 0–9. For 128-bit WEP, you need to enter 26 hex keys.

For instance:

C3 03 0F AF 0F 4B B2 C3 D4 4B C3 D4 E7 = 128-bit WEP key



3. Click “Save” to finish. Encryption in the wireless router is now set. Each of the computers on your wireless network will now need to be configured with the same security settings.

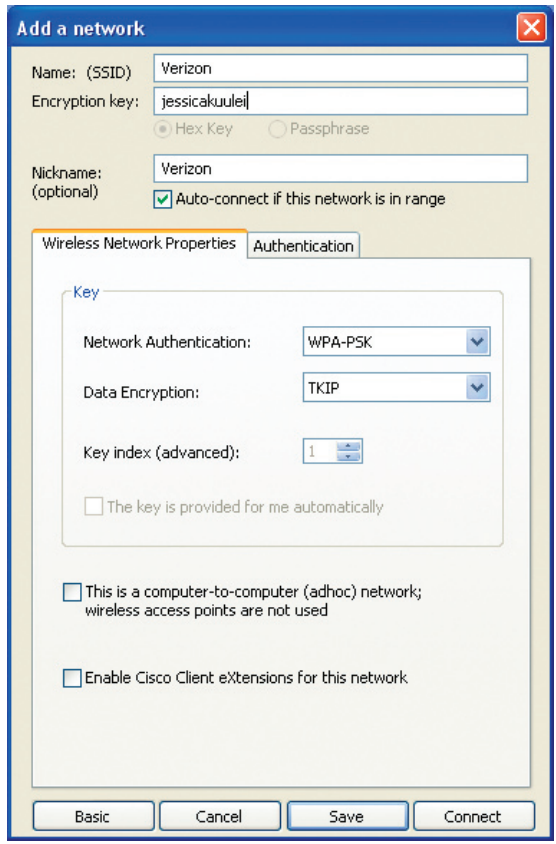
WARNING: If you are using a wireless client to turn on the security settings in your wireless router, you will temporarily lose your wireless connection until you activate security on your wireless client. Please record the key prior to applying changes in the wireless router. If you don’t remember the hex key, your client will be locked out of the wireless router.

WPA-PSK or WPA2-PSK (no server)

Choose this setting if your network does not use a radius server. WPA-PSK or WPA2-PSK (no server) is typically used in home and small office networking.

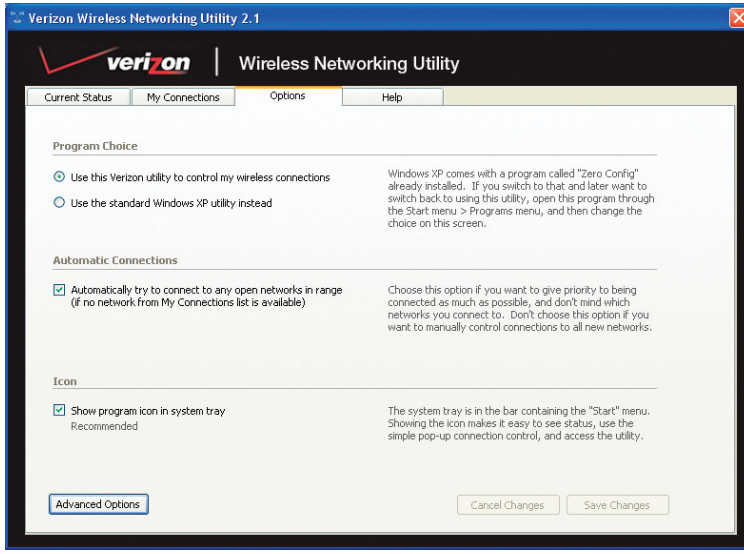
1. From the “Network Authentication” drop-down menu, select “WPA-PSK” or “WPA2-PSK (no server)”.

2. Enter your network key. This can be from eight to 63 characters and can be letters, numbers, or symbols. This same key must be used on all of the clients (network cards) that you want to include in your network.



3. Click “Save” to finish. You must now set all clients (network cards) to match these settings.

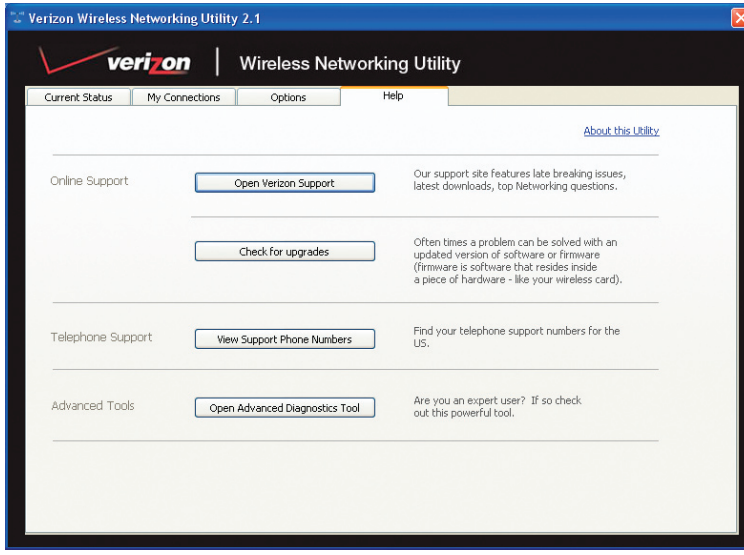
Wireless Networking Utility Options


Verizon Wireless Networking Utility 2.1
verizon
Wireless Networking Utility
Current Status
My Connections
Options
Help
Program Choice
Use this Verizon utility to control my wireless connections
Use the standard Windows XP utility instead
Windows XP comes with a program called "Zero Config" already installed. If you switch to that and later want to switch back to using this utility, open this program through the Start menu > Programs menu, and then change the choice on this screen.
Automatic Connections
Automatically try to connect to any open networks in range (if no network from My Connections list is available)
Choose this option if you want to give priority to being connected as much as possible, and don't mind which networks you connect to. Don't choose this option if you want to manually control connections to all new networks.
Icon
Show program icon in system tray
Recommended
The system tray is in the bar containing the "Start" menu. Showing the icon makes it easy to see status, use the simple pop-up connection control, and access the utility.
Advanced Options
Cancel Changes
Save Changes

The “Options” tab on the Wireless Networking Utility (WNU) provides the user the ability to customize his or her WNU settings.

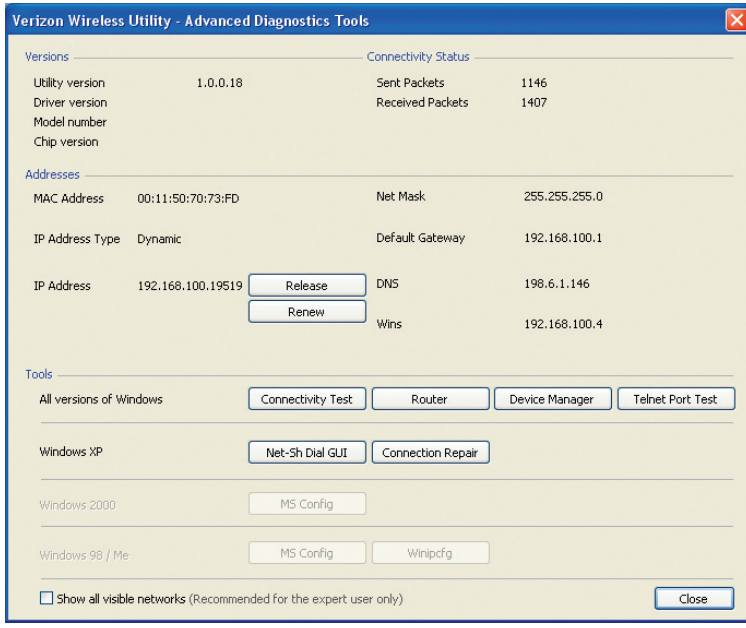
WNU Help

The WNU “Help” tab provides users with access to online and telephone support, as well as advanced diagnostic tools.


Verizon Wireless Networking Utility 2.1
verizon
Wireless Networking Utility
Current Status
My Connections
Options
Help
About this Utility
Online Support
Open Verizon Support
Our support site features late breaking issues, latest downloads, top Networking questions.
Check for upgrades
Often times a problem can be solved with an updated version of software or firmware (firmware is software that resides inside a piece of hardware - like your wireless card).
Telephone Support
View Support Phone Numbers
Find your telephone support numbers for the US.
Advanced Tools
Open Advanced Diagnostics Tool
Are you an expert user? If so check out this powerful tool.

Advanced Diagnostic Tools

The “Advanced Diagnostic Tools” section is the central control panel for all the settings of the hardware and software components of the wireless network. It provides an array of tests and connectivity services to ensure optimal network performance.


Verizon Wireless Utility - Advanced Diagnostics Tools
Versions
Utility version 1.0.0.18
Driver version
Model number
Chip version
Connectivity Status
Sent Packets 1146
Received Packets 1407
Addresses
MAC Address 00:11:50:70:73:FD
IP Address Type Dynamic
IP Address 192.168.100.19519
Release
Renew
Net Mask 255.255.255.0
Default Gateway 192.168.100.1
DNS 198.6.1.146
Wins 192.168.100.4
Tools
All versions of Windows
Connectivity Test
Router
Device Manager
Telnet Port Test
Windows XP
Net-Sh Dial GUI
Connection Repair
Windows 2000
MS Config
Windows 98 / Me
MS Config
Winipcfg
Show all visible networks (Recommended for the expert user only)
Close

I can't connect to the Internet wirelessly.

If you are unable to connect to the Internet from a wireless computer, please check the following items:

1. Look at the lights on your wireless router. If you're using a Wireless Router from Verizon, the lights should be as follows:
- The "Power" light should be on.
- The "Connected" light should be on, and not blinking.
- The "WAN" light should be either on or blinking.

If your Wireless Router's lights match these descriptions, go to number **2**, below.

If this is **NOT** the case, please contact Verizon Technical Support at 888-604-5880.

If you are not using a Wireless Router from Verizon, consult that router manufacturer's user guide.

2. Open your Wireless Networking Utility (WNU) software by clicking on the icon in the system tray at the bottom right-hand corner of the screen.

If you're using a Wireless Card from Verizon, the tray icon should look like this (the icon may be red or green):

3. The exact window that opens will vary depending on the model of wireless card you have; however, any of the utilities should have a list of "Available Networks". Available networks are wireless networks you can connect to.

If you are using a Verizon 802.11g (54g) Router, "Verizon54g" is the default name.

If you are using a Verizon 802.11b Router, the default name should be "WLAN".

If you are NOT using a Verizon Router, please consult your router manufacturer's user manual for the default name.

The name of your wireless network appears in "Available Networks".

If the correct network name is listed in the "Available Networks" list, please follow the steps below to connect wirelessly:

1. Click on the correct network name in the "Available Networks" list.
2. If the network has security (encryption) enabled, you will need to enter the network key. For more information regarding security, please see "Securing your Wi-Fi Network" on page 15 of this manual.
3. Within a few seconds, the tray icon in the lower right-hand corner of your screen should turn green, indicating a successful connection to the network.

If you are still unable to access the Internet after connecting to the wireless network, please contact Verizon Technical Support at 888-604-5880.

The name of your wireless network DOES NOT appear in the list of "Available Networks".

If the correct network name is not listed under "Available Networks" in the WNU, please attempt the following troubleshooting steps:

1. Temporarily move computer, if possible, to five to 10 feet away from the Wireless Router. Close the WNU and reopen it. If the correct network name now appears under "Available Networks", you may have a range or interference problem. Please see the suggestions listed in the "Placement of your Wireless Networking Hardware for Optimal Performance" section on page 2.
2. Using a computer that is connected to the Wireless Router via a network cable (as opposed to wirelessly), ensure that "Broadcast SSID" is enabled. This setting is found on the Router's wireless "Channel and SSID" configuration page. For detailed instructions on accessing this page and changing settings, please see your Wireless Router's User Manual.

If you are still unable to access the Internet after completing these steps, please contact Verizon Technical Support at 888-604-5880.

Installation CD-ROM does not start WNU.

If the CD-ROM does not start the WNU automatically, it could be that the computer is running other applications that are interfering with the CD drive.

If the WNU screen does not appear within 15–20 seconds, open up your CD-ROM drive by double-clicking on the “My Computer” icon. Next, double-click on the CD-ROM drive that the Installation CD has been placed in to start the installation. Then double-click on the folder named “Files”. Next, double-click on the icon named “Setup.exe”.

Power LED does not come ON; Card is not working.

If the LED indicators are not ON, the problem may be that the Card is not connected or installed properly.

Verify that the Card is plugged firmly into the PCI slot of your computer. Check to see that the drivers for the Card have been installed. Right-click on the “My Computer” icon on your desktop. Choose “Properties” and navigate to the “Device Manager” and see if your Card is listed without any errors. If an error is indicated, contact Verizon Technical Support at 888-604-5880.

Link LED is blinking slowly; cannot connect to a wireless network or the Internet.

If your Card appears to be functioning properly, but you cannot connect to a network or you have a red wireless icon at the bottom of your screen, the problem may be that there is a mismatch between the network name (SSID) settings in your wireless network properties.

Check the SSID settings to see if they match. The SSID is case-sensitive and the spelling on each computer must be exactly the same in order for the Card to connect to the wireless router.

Note: To check the SSID settings or look for an available network, double-click the Signal Indicator icon to bring up the “Wireless Networks” screen. Click “Add” if you do not see the network you are trying to connect to and type in the SSID.

For more information about setting up an SSID, please refer to your router manufacturer’s user manual.

If issues persist even at close range, please contact Verizon Technical Support at 888-604-5880.

Link LED is solid but I cannot connect to the Internet.

If you have a signal but can't get online or obtain an IP address, the problem may be that there is a mismatch between the encryption key settings in your computer and wireless router.

Check the WEP key settings to see if they match. The key is case-sensitive and the spelling on each computer and wireless router must be exactly the same in order for the Card to connect to the router. For more information about encryption, please see the "Securing your Wi-Fi Network" section of this User Manual.

If issues persist even at close range, please contact Verizon Technical Support at 888-604-5880.

Data transfer is sometimes slow.

Wireless technology is radio-based, which means connectivity and the throughput performance between devices decreases when the distance between devices increases. Other factors that will cause signal degradation (metal is generally the worst culprit) are obstructions such as walls and metal appliances. As a result, the typical indoor range of your wireless devices will be between 100 to 200 feet. Note also that connection speed may decrease as you move farther from the wireless router. In order to determine if wireless issues are related to range, we suggest temporarily moving the computer, if possible, to five to 10 feet away from the wireless router. Please see the section titled "Placement of your Wireless Networking Hardware for Optimal Performance" in this manual.

If issues persist even at close range, please contact Verizon Technical Support at 888-604-5880.

Signal strength is poor.

Wireless technology is radio-based, which means connectivity and the throughput performance between devices decreases when the distance between devices increases. Other factors that will cause signal degradation (metal is generally the worst culprit) are obstructions such as walls and metal appliances. As a result, the typical indoor range of your wireless devices will be between 100 to 200 feet. Note also that connection speed may decrease as you move farther from the wireless router. Please see the section titled "Placement of your Wireless Networking Hardware for Optimal Performance" in this manual.

If issues persist even at close range, please contact Verizon Technical Support at 888-604-5880.

Why are there two wireless utilities in my system tray? Which one should I use?

There are several features and advantages to using the WNU over the Windows XP Wireless Zero Configuration utility. We offer a site survey, detailed link information, and adapter diagnosis, to name a few.

It's essential to know which utility is managing your adapter. We recommend using the WNU. To use the WNU, follow the steps below:

Step 1 Right-click on the network status icon in the system tray and select "View Available Wireless Networks".

Step 2 Click on the "Advanced" button in the lower left-hand corner of the "Available Wireless Networks" window.

Step 3 From the "Advanced" tab, uncheck "Use Windows to configure my wireless network". Once the box is unchecked, click "OK" to close the window.

You are now using the WNU to configure the Card.

The Card is not detected by operating system.

- The Card is not recognized by your desktop computer.
- The "New Hardware Wizard" does not appear when booting up the computer.
- Receive Microsoft Error Code: 10
- Receive Microsoft Error Code: 0

If the "New Hardware Wizard" does not appear, or you receive any of the above error codes, please attempt the following troubleshooting steps:

1. Remove the screws behind your computer case that secure the computer cover and remove cover.
2. Touch any metal part of the case to discharge static electricity, which could damage your product or your computer.
3. Remove the Card.

4. Locate a different empty PCI expansion slot. It is usually white in color.
5. Confirm that the Card will fit into the slot you have chosen. Keep in mind that the included antenna needs to be oriented with the top pointing up. If there are cables and other connections in the way, try to pick the PCI slot that has the fewest obstructions to correct the positioning of the antenna.
6. Remove the metal port cover from the back of the computer that corresponds to the PCI slot you selected. If there is a screw, place it in a safe place, as you will be using it to attach the Card to the computer later.
7. Push the Card firmly into the PCI slot that you have chosen. Apply pressure as needed until the connector is fully seated.
8. Now secure the Card with the screw that you previously placed in a safe place.
9. Carefully screw the antenna onto the threaded connector on the Card. Turn the antenna until it is vertical and pointing up.
10. Replace the computer's cover. Now that the Card is installed, you can reconnect the power cord, and turn it back on.
11. The computer should now properly recognize the Card.

Technical Support
If you want to contact technical support by phone, please call:
US: 888-604-5880

Manufactured by Belkin

Wi-Fi® Interoperability Certificate

Wi-Fi® Interoperability Certificate — Certification ID: W002895

Wi Fi CERTIFIED bg

This certificate represents the capabilities and features that have passed the interoperability testing governed by the Wi-Fi Alliance. Detailed descriptions of these features can be found at www.wi-fi.org/certificate

Certification Date:	October 1, 2004
Category:	Internal Card
Company:	Belkin Components
Product:	BELKIN Wireless G Desktop Network Card
Model/SKU#:	F5D7000

This product has passed Wi-Fi certification testing for the following standards:

IEEE Standard	Security		
802.11b	WPA™ - Personal		
802.11g	WPA™ - Enterprise		

For more information: www.wi-fi.org/certified_products

Manufactured by Belkin

FCC Statement

DECLARATION OF CONFORMITY WITH FCC RULES FOR ELECTROMAGNETIC COMPATIBILITY

We, Belkin Corporation, of 501 West Walnut Street, Compton, CA 90220, declare under our sole responsibility that the product,

F5D7000

to which this declaration relates, complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Caution: Exposure to Radio Frequency Radiation.
The radiated output power of this device is far below the FCC radio frequency exposure limits. Nevertheless, the device shall be used in such a manner that the potential for human contact during normal operation is minimized.

When connecting an external antenna to the device, the antenna shall be placed in such a manner to minimize the potential for human contact during normal operation. In order to avoid the possibility of exceeding the FCC radio frequency exposure limits, human proximity to the antenna shall not be less than 20cm (8 inches) during normal operation.

Federal Communications Commission Notice
This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

Manufactured by Belkin

This equipment generates, uses, and can radiate radio frequency energy. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try and correct the interference by one or more of the following measures:

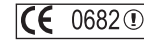
- Reorient or relocate the receiving antenna.
- Increase the distance between the equipment and the receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Modifications
The FCC requires the user to be notified that any changes or modifications to this device that are not expressly approved by Belkin Corporation may void the user's authority to operate the equipment.

Canada-Industry Canada (IC)
The wireless radio of this device complies with RSS 139 & RSS 210 Industry Canada. This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B conforme á la norme NMB-003 du Canada.

Europe-European Union Notice
Radio products with the CE 0682 or CE alert marking comply with the R&TTE Directive (1995/5/EC) issued by the Commission of the European Community.



Compliance with this directive implies conformity to the following European Norms (in brackets are the equivalent international standards).

- EN 60950 (IEC60950) – Product Safety
- EN 300 328 Technical requirement for radio equipment
- ETS 300 826 General EMC requirements for radio equipment.

To determine the type of transmitter, check the identification label on your Belkin product. Products with the CE marking comply with the EMC Directive (89/336/EEC) and the Low Voltage Directive (72/23/EEC) issued by the Commission of the European Community. Compliance with these directives implies conformity to the following European Norms (in brackets are the equivalent international standards):

- EN 55022 (CISPR 22) – Electromagnetic Interference
- EN 55024 (IEC61000-4-2,3,4,5,6,8,11) – Electromagnetic Immunity
- EN 61000-3-2 (IEC610000-3-2) – Power Line Harmonics
- EN 61000-3-3 (IEC610000) – Power Line Flicker
- EN 60950 (IEC60950) – Product Safety

Products that contain the radio transmitter are labeled with CE 0682 or CE alert marking and may also carry the CE logo.

Manufactured by Belkin

Belkin Corporation Limited Five-Year Product Warranty

Belkin Corporation warrants this product against defects in materials and workmanship for five years. If a defect is discovered, Belkin will, at its option, repair or replace the product at no charge provided it is returned during the warranty period, with transportation charges prepaid, to the authorized Belkin dealer from whom you purchased the product. Proof of purchase may be required.

This warranty does not apply if the product has been damaged by accident, abuse, misuse, or misapplication; if the product has been modified without the written permission of Belkin; or if any Belkin serial number has been removed or defaced.

THE WARRANTY AND REMEDIES SET FORTH ABOVE ARE EXCLUSIVE IN LIEU OF ALL OTHERS, WHETHER ORAL OR WRITTEN, EXPRESSED OR IMPLIED. BELKIN SPECIFICALLY DISCLAIMS ANY AND ALL IMPLIED WARRANTIES, INCLUDING, WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

No Belkin dealer, agent, or employee is authorized to make any modification, extension, or addition to this warranty.

BELKIN IS NOT RESPONSIBLE FOR SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES RESULTING FROM ANY BREACH OF WARRANTY, OR UNDER ANY OTHER LEGAL THEORY, INCLUDING BUT NOT LIMITED TO, LOST PROFITS, DOWNTIME, GOODWILL, DAMAGE TO OR REPROGRAMMING OR REPRODUCING ANY PROGRAM OR DATA STORED IN, OR USED WITH, BELKIN PRODUCTS.

Some states do not allow the exclusion or limitation of incidental or consequential damages or exclusions of implied warranties, so the above limitations or exclusions may not apply to you. This warranty gives you specific legal rights, and you may also have other rights that vary from state to state.

User Manual

Wireless G Desktop Card

Verizon Technical Support
888-604-5880

© 2006 Verizon. All rights reserved. VERIZON and the VERIZON Logo are trademarks of Verizon Trademark Services LLC. The mark Wi-Fi is a registered mark of the Wi-Fi Alliance. The "Wi-Fi CERTIFIED" logo is a certification mark of the Wi-Fi Alliance. All other trademarks are the trademarks of their respective owners.

P75084